CLAIMS

What is claimed is:

1. In a spread-spectrum receiver, a method for processing a received analog spread-spectrum signal, comprising:

determining whether to attenuate the received analog spread-spectrum signal;

based on the attenuation determination, selectively attenuating the received analog spread-spectrum signal to generate a selectively attenuated analog spread-spectrum signal;

digitizing the selectively attenuated analog spread-spectrum signal to generate a digital spread-spectrum signal;

filtering the digital spread-spectrum signal in an attempt to compensate for interference in the received analog spread-spectrum signal to generate a filtered digital spread-spectrum signal; and

de-spreading the filtered digital spread-spectrum signal to generate a de-spread digital signal, wherein the attenuation determination is based on the amplitude of the digital spread-spectrum signal prior to the interference-compensation filtering and the de-spreading.

2. The invention of claim 1, wherein the filtering attempts to compensate for off-channel interference in the received analog spread-spectrum signal.

3. The invention of claim 1, wherein the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR).

4. The invention of claim 1, wherein:

the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-spectrum signal is greater than an upper threshold; and

the received analog spread-spectrum signal is not attenuated when the amplitude of the digital spread-spectrum signal is less than a lower threshold, wherein the upper threshold is greater than the lower threshold.

5. The invention of claim 4, wherein the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination.

6. The invention of claim 1, wherein:

the received analog spread-spectrum signal is a radio frequency (RF) signal; and

further comprising:

converting the RF signal to an intermediate frequency (IF) prior to the digitization; and

converting the IF signal to baseband after digitization.

7. The invention of claim 6, wherein the filtering and the de-spreading are implemented at baseband.

8. The invention of claim 1, wherein:

the filtering attempts to compensate for off-channel interference in the received analog spread-spectrum signal;

the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR);

the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-spectrum signal is greater than an upper threshold;

the received analog spread-spectrum signal is not attenuated when the amplitude of the digital spread-spectrum signal is less than a lower threshold;

the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination;

the received analog spread-spectrum signal is a radio frequency (RF) signal;

further comprising:

converting the RF signal to an intermediate frequency (IF) prior to the digitization; and

converting the IF signal to baseband after digitization; and

the filtering and the de-spreading are implemented at baseband.

9. A spread-spectrum receiver, comprising:

a variable attenuator adapted to selectively attenuate a received analog spread-spectrum signal to generate a selectively attenuated analog spread-spectrum signal;

an analog-to-digital converter (ADC) adapted to digitize the selectively attenuated analog spread-spectrum signal to generate a digital spread-spectrum signal;

an interference-compensation filter adapted to filter the digital spread-spectrum signal in an attempt to compensate for interference in the received analog spread-spectrum signal to generate a filtered digital spread-spectrum signal;

a digital processor adapted to de-spread the filtered digital spread-spectrum signal to generate a de-spread digital signal; and

a controller adapted to control the variable attenuator based on the amplitude of the digital spread-spectrum signal prior to the interference-compensation filter and the digital processor.

10. The invention of claim 9, wherein the filter is adapted to attempt to compensate for off-channel interference in the received analog spread-spectrum signal.

11. The invention of claim 9, wherein the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR).

12. The invention of claim 9, wherein:

the controller is adapted to control the variable attenuator to attenuate the received analog spread-spectrum signal when the amplitude of the digital spread-spectrum signal is greater than an upper threshold; and

the controller is adapted to control the variable attenuator not to attenuate the received analog spread-spectrum signal when the amplitude of the digital spread-spectrum signal is less than a lower threshold, wherein the upper threshold is greater than the lower threshold.

13. The invention of claim 12, wherein the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination.

14. The invention of claim 9, wherein:

the received analog spread-spectrum signal is a radio frequency (RF) signal; and

further comprising:

a mixer adapted to convert the RF signal to an intermediate frequency (IF) prior to the digitization; and

a digital downconverter adapted to convert the IF signal to baseband after digitization.

15. The invention of claim 14, wherein the filter and the digital processor are adapted to operate at baseband.

16. The invention of claim 9, wherein:

the filter is adapted to attempt to compensate for off-channel interference in the received analog spread-spectrum signal;

the selectively attenuated analog spread-spectrum signal has a negative signal-to-noise ratio (SNR);

the controller is adapted to control the variable attenuator to attenuate the received analog spread-spectrum signal when the amplitude of the digital spread-spectrum signal is greater than an upper threshold;

the controller is adapted to control the variable attenuator not to attenuate the received analog spread-spectrum signal when the amplitude of the digital spread-spectrum signal is less than a lower threshold;

the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination;

the received analog spread-spectrum signal is a radio frequency (RF) signal;

further comprising:

a mixer adapted to convert the RF signal to an intermediate frequency (IF) prior to the digitization; and

a digital downconverter adapted to convert the IF signal to baseband after digitization; and

the filter and the digital processor are adapted to operate at baseband.